

Please type a plus sign (+) inside this box → ☐

#1103

PTO/SB/088 (08-00)

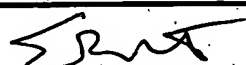
Approved for use through 10/31/2002. OMB 0851-0031

U. S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

| | | | |
|---|------------------------|--------------------------|--------------|
| Substitute for form 1449B/PTO | | Complete if Known | |
| INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary) | | Application Number | 10/706,610 |
| | | Filing Date | |
| | | First Named Inventor | Petra SPECHT |
| | | Group Art Unit | 2826 |
| | | Examiner Name | Per |
| Sheet 1 of 4 | Attorney Docket Number | UCB-3/CIP (B99-025-3) | |

| OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS | | | |
|---|-----------------------|---|----------------|
| Examiner Initials | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T ² |
| EP | AA. | F.W. Smith et al, "New MBE Buffer Used to Eliminate Backgating in GaAs MESFET's", IEEE Electron Device Letters, Vol. 9, No. 2, 1988, pp. 77-80. | |
| EP | AB. | G.M. Metze et al, "Effects of Very Low Growth Rates on GaAs Grown by Molecular Beam Epitaxy at Low Substrate Temperatures", Applied Physics Letters, Vol. 42, No. 9, 1 May 1983, pp. 818-820. | |
| EP | AC. | S. Gupta et al, "Ultrafast Carrier Dynamics in III-V Semiconductors Grown by Molecular Beam Epitaxy at Very Low Substrate Temperatures", IEEE Journal of Quantum Electronics, Vol. 28, No. 10, October 1992, pp. 2464-2472. | |
| EP | AD. | S. Gupta et al, "Subpicosecond Carrier Lifetime in GaAs Grown by Molecular Beam Epitaxy at Low Temperatures", Applied Physics Letters, Vol. 59, No. 25, 16 December 1991, pp. 3276-3278. | |
| EP | AE. | T.R. Weatherford et al, "Effects of Low Temperature Buffer Layer Thickness and Growth Temperature on the SEE Sensitivity of GaAs HIGFET Circuits", IEEE Transactions on Nuclear Science, Vol. 44, No. 6, December 1997, pp. 2298-2305. | |
| EP | AF. | D.C. Look, "On Compensation and Conductivity Models for Molecular Beam Epitaxial GaAs Grown at Low Temperature", Journal of Applied Physics, Vol. 70, No. 6, 15 September 1991, pp. 3148-3151. | |
| EP | AG. | M. Kaminska et al, "High Resistivity of Low Temperature MBE GaAs", Semi Insulating III-V Materials, Proceedings of the 6th Conference on Semi insulating III V Materials, 13-16 May 1990, Toronto, Canada, pp. 111-116. | |
| EP | AH. | X. Liu et al, "Native Point Defects in Low Temperature Grown GaAs", Applied Physics Letters, Vol. 67, No. 2, 10 July 1995, pp. 279-281. | |
| EP | AI. | M. Luysberg et al, "Effects of the Growth Temperature and As/Ga Flux Ratio on the Incorporation of Excess As into Low Temperature Grown GaAs", Journal of Applied Physics, Vol. 83, No. 1, 1 January 1998, pp. 561-566. | |
| EP | AJ. | Zuzanna Liliental-Weber, "TEM Study of the Structure of MBE GaAs Layers Grown at Low Temperature", Materials Research Society Symposium Proceedings, San Francisco, California, 16-19 April 1990, Vol. 198, pp. 371-376. | |
| EP | AK. | M.R. Melloch et al, "Formation of Arsenic Precipitates in GaAs Buffer Layers Grown by Molecular Beam Epitaxy at Low Substrate Temperatures", Applied Physics Letters, Vol. 57, No. 15, 8 October 1990, pp. 1531-1533. | |

| | | | |
|--------------------|---|-----------------|---------|
| Examiner Signature |  | Date Considered | 3/29/05 |
|--------------------|---|-----------------|---------|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U. S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

(u3-1449/keb:ca/7)

Please type a plus sign (+) inside this box → ☐


PTO/SB/088 (08-00)

Approved for use through 10/31/2002. OMB 0851-0031
U. S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

| | | | |
|---|------|--------------------------|-----------------------|
| Substitute for form 1449B/PTO | | Complete if Known | |
| INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary) | | Application Number | 10/706,610 |
| | | Filing Date | |
| | | First Named Inventor | Petra SPECHT |
| | | Group Art Unit | 2820 |
| | | Examiner Name | PECT |
| Sheet 2 | of 4 | Attorney Docket Number | UCB-3/CIP (B99-025-3) |

| OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS | | | |
|---|-----------------------|---|----------------|
| Examiner Initials ¹ | Cite No. ² | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published: | T ² |
| EP | AL. X. | Liu et al, "Mechanism Responsible for the Semi Insulating Properties of Low Temperature Grown GaAs", Applied Physics Letters, Vol. 65, No. 23, 5 December 1994, pp. 3002-3004. | |
| EP | AM. B.J. | Lin et al, "Anomalies in MODFET's with a Low Temperature Buffer", IEEE Transactions on Electron Devices, Vol. 37, No. 1, January 1990, pp. 46-50. | |
| EP | AN. Z. | Liliental Weber et al, "Structural Properties of the GaAs Layers Grown by MBE at Low Temperatures", Semi Insulating III-V Materials, Proceedings of the 8th Conference on Semi insulating III-V Materials, 6-10 June 1994, Warsaw, Poland, pp. 305-317. | |
| EP | AO. P. | Specht et al, "Defect Control in As-Rich GaAs", Materials Science Forum, Proceedings of the 19th International Conference on Defects in Semiconductors, Aveiro, Portugal, July 1997, Vols. 258-263, pp. 951-956. | |
| EP | AP. M.K. | Weilmeier et al, "A New Optical Temperature Measurement Technique for Semiconductor Substrates in Molecular Beam Epitaxy", Canadian Journal of Physics, Vol. 69, 1991, pp. 422-426. | |
| EP | AQ. U. | Siegner et al, "Ultrafast High-Intensity Nonlinear Absorption Dynamics in Low Temperature Grown Gallium Arsenide", Applied Physics Letters, Vol. 69, No. 17, 21 October 1996, pp. 2566-2568. | |
| EP | AR. P. | Grenier et al, "Subband Gap Carrier Dynamics in Low Temperature Grown GaAs", Applied Physics Letters, Vol. 70, No. 15, 14 April 1997, pp. 1998-2000. | |
| EP | AS. T.S. | Sonsnowski et al, "High-Carrier-Density Electron Dynamics in Low Temperature Grown GaAs" Applied Physics Letters, Vol. 70, No. 24, 16 June 1997, pp. 3245-3247. | |
| EP | AT. M.R. | Melloch et al, "Formation of Two Dimensional Arsenic Precipitate Arrays in GaAs", Applied Physics Letters, Vol. 61, No. 2, 13 July 1992, pp. 177-179. | |
| EP | AU. M. | Kaminska et al, "Hopping Conduction of Low Temperature GaAs Within an Arsenic Antisite Defect Band", 20th International Conference on The Physics of Semiconductors, 6-10 August 1990, Thessaloniki, Greece, Vol. 1, pp. 473-476. | |
| EP | AV. D.C. | Look et al, "Anomalous Hall-Effect Results in Low Temperature Molecular Beam Epitaxial GaAs: Hopping in a Dense EL2 Like Band", Physical Review B, Vol. 42, No. 6, 15 August 1990, pp. 3578-3581. | |
| EP | AW. J. | Gebauer et al, "Defect Identification in GaAs Grown at Low Temperatures by Positron Annihilation", Journal of Applied Physics, Vol. 87, No. 12, 15 June 2000, pp. 8368-8379. | |

| | | | |
|--------------------|---|-----------------|---------|
| Examiner Signature |  | Date Considered | 3/29/05 |
|--------------------|---|-----------------|---------|

¹ EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

² Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U. S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

(u3-1449/ksb:ca/7)

Please type a plus sign (+) inside this box → +

PTO/SB/088 (08-00)
Approved for use through 10/31/2002. OMB 0551-0031

U. S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

| | | | |
|--|---|---|---|
| Substitute for form 1449B/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary) | | Complete if Known Application Number <u>10/706,610</u> Filing Date _____ First Named Inventor <u>Petra SPECHT</u> Group Art Unit <u>2826</u> Examiner Name <u>Pert</u> Attorney Docket Number <u>UCB-3/CIP (B99-025-3)</u> | |
| Sheet | 3 | of | 4 |

| OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS | | | |
|---|-----------------------|---|----------------|
| Examiner Initials | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T ² |
| EP | AX. | E.R. Weber et al, "Identification of AsGa Antisites in Plastically Deformed GaAs", Journal of Applied Physics, Vol. 53, No. 9, September 1982, pp. 6140-6143. | |
| EP | AY. | D.E. Bliss et al, "Annealing Characteristics of Low Temperature Grown GaAs:Be", Materials Research Society Symposium Proceedings, 4-6 December 1991, Boston, Massachusetts, Vol. 241, pp. 93-98. | |
| EP | AZ. | J. Gebauer et al, "Identification and Quantification of Defects in Highly Si Doped GaAs by Positron Annihilation and Scanning Tunneling Microscopy" Physical Review Letters, Vol. 78, No. 17, 28 April 1997, pp. 3334-3337. | |
| EP | BA. | B.I. Shklovskii et al, "A General Description of Hopping Conduction in Lightly Doped Semiconductors" Chapter 4, Section 1, Electronic Properties of Doped Semiconductors, (©1984, Springer Verlag), pp. 74-82. | |
| EP | BB. | R.C. Lutz et al, "Thermal Stabilization of Non Stoichiometric GaAs through Beryllium Doping", Materials Research Society Symposium Proceedings, 13-17 April 1998, San Francisco, California, Vol. 510, pp. 55-59. | |
| EP | BC. | S.M. Sze, Appendix H, Physics of Semiconductor Devices, 2nd ed., (© 1981, John Wiley & Sons, Inc.), pp. 850-851. | |
| EP | BD. | J. Kruger et al, "The Influence of Native Point Defects on the Performance of Diodes Built on Neutron Irradiated Semi Insulating GaAs", Semiconducting and Insulating Materials, Proceedings of the 9th Conference on Semiconducting and Insulating Materials (SIMC'9), 29 April-3 May 1996, Toulouse, France, pp. 345-348. | |
| EP | BE. | M.A. Zaidi et al, "Minority Carrier Capture Cross Section of the EL2 Defect in GaAs", Applied Physics Letters, Vol. 61, No. 20, 16 November 1992, pp. 2452-2454. | |
| EP | BF. | M. Oestreich et al, "Picosecond Spectroscopy of Plastically Deformed GaAs", Journal of Luminescence, Vol. 58, (© 1994, Elsevier Science B.V.), pp. 123-126. | |
| EP | BG. | A. Mitonneau et al, "Electron and Hole Capture Cross Sections at Deep Centers in Gallium Arsenide", Revue de Physique Appliquee, Vol. 14, October 1979, pp. 853-861. | |
| EP | BH. | P. Specht et al, "A Standard Low Temperature GAAS Growth: Prerequisite for Defect Engineering", 4th Symposium on Non Stoichiometric III-V Compounds, Pacific Grove, CA, October 2-4, 2002, pp. 31-36. | |

| | | | |
|--------------------|--|-----------------|----------------|
| Examiner Signature | | Date Considered | <u>3/29/05</u> |
|--------------------|--|-----------------|----------------|

*EXAMINER: Initial if reference considered; whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U. S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

(u3-1449/kab:ca/7)

Please type a plus sign (+) inside this box → ☐

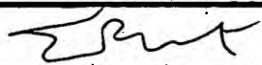
PTO/SB/08B (08-00)
Approved for use through 10/31/2002. OMB 0851-0031

U. S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

| | | | |
|---|------|---------------------------|-----------------------|
| Substitute for form 1449B/PTO | | C mpl. to If Kn wn | |
| INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary) | | Application Number | 10/706610 |
| | | Filing Date | |
| | | First Named Inventor | Petra SPECHT |
| | | Group Art Unit | 2826 |
| | | Examiner Name | Pert |
| Sheet 4 | of 4 | Attorney Docket Number | UCB-3/CIP (B99-025-3) |

| OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS | | | |
|---|-----------------------|--|----------------|
| Examiner Initials | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T ² |
| EP | BI. | Sprecht et al, "Defect Control in As-Rich GaAs", Materials Science Forum, Vols. 258-263, Switzerland, 1997, pp. 951-956. | |
| EP | BJ. | Lutz et al, "Electrical Properties and Thermal Stability of Be-doped Non-stoichiometric GaAs", Semiconducting and Insulating Materials, 1998, Proceedings of the 10th Conference, Berkeley, CA, June 1, 1998-June 5, 1998, pp. 113-117. | |
| EP | BK. | Zhao et al, "Time Resolved Reflectivity Measurement of Thermally Stabilized Low Temperature Grown GaAs Doped with Beryllium", Semiconducting and Insulating Materials, 1998, Proceedings of the 10th Conference, Berkeley, CA, June 1, 1998-June 5, 1998, pp. 130-133. | |
| EP | BL. | Maltez et al, "Structural and Photoluminescence Analysis of Er implanted LT-GaAs", Semiconducting and Insulating Materials, 1998, Proceedings of the 10th Conference, Berkeley, CA, June 1, 1998-June 5, 1998, pp. 122-125. | |
| EP | BM. | Luyssberg et al, "Control of Stoichiometry Dependent Defects in Low Temperature GaAs", Semiconducting and Semi Insulating Materials Conference, Toulouse, France, April 29, 1996 - May 3, 1996, pp. 21-26. | |
| EP | BN. | P. Specht et al, "Conductive Non-Stoichiometric III V Compounds: Properties and Prospective Applications", Symposium on Non-Stoichiometric III-V Compounds, October 8th 10th 2001, Erlangen, Germany, pp. 1-6. | |
| EP | BO. | P. Specht et al, "Defect engineering in MBE grown GaAs based materials", Int. Conf. SIMC-XI, Australia, 2000, 4 pages. | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| | | | |
|--------------------|---|-----------------|---------|
| Examiner Signature |  | Date Considered | 5/21/05 |
|--------------------|---|-----------------|---------|

*EXAMINER: "Initial" if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U. S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

(u3-1449/ksb:ca/7)